

ADDITIONAL NOTES ON THE ERIOCAULACEAE. LXVII

Harold N. Moldenke

PAEPALANTHUS TRICHOPEPLUS Alv. Silv.

Additional bibliography: Moldenke, *Phytologia* 35: 130. 1977.

The Eitens encountered this plant in a natural open campo with "campo rupestre" vegetation, at 1100—1200 m. altitude.

Additional citations: BRAZIL: Minas Gerais: Eiten & Eiten 10986 (W--2799674).

PAEPALANTHUS TRICHOPHYLLUS (Bong.) Körn.

Additional bibliography: Jacks. in Hook. f. & Jacks., *Ind. Kew.*, imp. 3, 1: 879 (1960) and imp. 3, 2: 402. 1960; Rennó, *Levant. Herb. Inst. Agron. Minas* 71. 1960; Moldenke, *Fifth Summ.* 1: 168 (1971) and 2: 515, 581, & 959. 1971; Angely, *Fl. Anal. & Fitogeogr. Est. S. Paulo*, ed. 1, 6: 1160 & *Ind.* 12 & 21. 1972; Moldenke, *Phytologia* 35: 131. 1977.

This species is apparently based on L. Riedel 292 from "an trockenem, sandigen Stellen bei S. João d'El Rey", Minas Gerais, Brazil, collected in anthesis in July, and deposited in the Leningrad herbarium. An isotype in the Berlin herbarium was photographed there by Macbride as his type photograph number 10659. Bongard's original (1831) description is "Caulescens; caule subramoso, folioso; foliis caulinis amplexicaulibus, lanceolatis, acuminatis, mucronatis, subcarinatis, piloso-canescens; pedunculis terminalibus vaginisque pilosis". The plate "54", cited by Bongard, apparently was never actually published and probably exists only in the Leningrad herbarium or library. The Angely (1972) reference in the bibliography of this species is sometimes cited as "1970", the title-page date, but was not actually published until 1972.

Collectors have found this plant growing on campos, among rocks, on moist ground, and in damp places and bogs, at 1000—1200 meters altitude, flowering in February, March, April, July, and August. Harley and his associates found it growing in an area of burned-over grassland, marsh, and cutover woodlands, with rocky hillsides of talc and metamorphic rock.

Ruhland (1903) cites, probably from the Berlin herbarium: Minas Gerais: Glaziou 17307 & 18586, L. Riedel 292, and Schwacke 7246, 12182, & 14573. São Paulo: Glaziou 17843. Silveira (1928) cites A. Silveira 250 from Minas Gerais.

The species is similar in general appearance to P. acutipilus Alv. Silv., P. babyloniensis Alv. Silv., P. camptophyllus Ruhl., P. chrysophorus Alv. Silv., and P. flaccidus (Bong.) Kunth.

Citations: BRAZIL: Bahia: Harley, Renvoize, Erskine, Brighton, & Pinheiro in Harley 16066 (Z); Lützelburg 98 (N, Qu), 98a (Mu, Z), 98b (Mu). Minas Gerais: Glaziou 17307 (Br); L. Riedel 292

[Macbride photos 10659] (B--isotype, N--photo of isotype, N--photo of isotype, W--photo of isotype).

PAEPALANTHUS TRUXILLENSIS Körn. in Mart., Fl. Bras. 3 (1): 406. 1863.

Synonymy: Dupatya truxillensis (Körn.) Kuntze, Rev. Gen. Pl. 2: 746. 1891. Dupatya truxillensis Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902.

Bibliography: Körn. in Mart., Fl. Bras. 3 (1): 405, 406, 502, & 508. 1863; Kuntze, Rev. Gen. Pl. 2: 746. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 402. 1894; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 201, 207, 284, & 292. 1903; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 2, 145. 1941; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 2: 402. 1946; Moldenke, Known Geogr. Distrib. Erioc. 6, 31, & 55. 1946; Moldenke, Phytologia 2: 373. 1947; Moldenke, Alph. List Cit. 2: 352 (1948) and 3: 974. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 64 & 212. 1949; Moldenke, Phytologia 4: 206. 1953; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 3, 145. 1959; Moldenke, Résumé 72, 282, & 490. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 2: 402. 1960; Moldenke, Fifth Summ. 1: 126 & 486 (1971) and 2: 959. 1971; Moldenke, Phytologia 31: 383. 1975.

This species is based on Linden 297 from the "oberhalb dem Paramo von Agua de Obispo", at 3300 meters altitude, Trujillo, Venezuela, probably deposited in the Berlin herbarium. An isotype in the Vienna herbarium was photographed there by Macbride as his type photograph number 29996. Ruhland (1903) cites only the type collection.

Ruiz-Terán & López-Figueiros describe the plant as a "Hierba rosulada, caudicirrosuleto o acaulirrosuleto herbáceo, en prado pantanoso. Raíz axonomorfa, ortótropa, robusta, 10 cm. de largo. Cádice ortótropo, de unas 10 cm. x 15--17 mm., negro pardusco, con raíces adventicias filiformes, del mismo color. Rósula densifoliada, hasta de 6--10 x 16 cm. Hojas sésiles, triangular-lineares o deltado-sublanceoladas o deltado-lineares a lanceolado-lineares, 4--9 cm. x 6--18 mm., agudas pero no espinescentes o espinascentes en el ápice, pilosas o pubescentes en ambas caras, más por el envés o más hacia el tercio proximal por el envés, o virtualmente glabras en ambas caras, ciliadas en los bordes, concoloras, verde intensas, las proximales (adultas) submates, angustihialinas y denticuladas en los bordes, blanco-pilosas. Escapos exsertos, 6--30 cm. de largo o más cortos, estriado-sulcados, pubescentes (sobre todo hacia el tercia distal), con 'bractea' o vaina, verdiamarillentos en el resto. Capítulos hemisféricos, 5--8 x 7--15 mm., con pelos blancos a blanquecino grisáceos. Flores blancas." They report it as frequent or moderately frequent on páramos, "cabecera semiboscosa de la quebrada", and savannas at 2800--3400 meters altitude.

Additional citations: VENEZUELA: Apure: Ruiz-Terán & López-Figueiros 8860 (Tu). Mérida: Ruiz-Terán 7152 (Ac); Ruiz-Terán &

López-Figueiras 8623 (Kh, Ld). Táchira: Ruiz-Terán & López-Figueiras 1212 (Z), 8918 (M1). Trujillo: Linden 297 [Macbride photos 29996] (B—isotype, N—photo of isotype, W—photo of isotype). MOUNTED ILLUSTRATIONS: drawings & notes by Körnícke (B).

PAEPALANTHUS TUBERCULATUS Alv. Silv., Fl. Serr. Min. 52. 1908.

Bibliography: Alv. Silv., Fl. Serr. Min. 52. 1908; Fedde & Schust. in Just, Bot. Jahresber. 46 (2): 4. 1924; Alv. Silv., Fl. Mont. 1: 222--224 & 414, pl. 147. 1928; A. W. Hill, Ind. Kew. Suppl. 8: 169. 1933; Wangerin in Just, Bot. Jahresber. 57 (1): 477. 1937; Worsdell, Ind. Lond. Suppl. 2: 184. 1941; Moldenke, Known Geogr. Distrib. Erioc. 16 & 55. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 88 & 212. 1949; Moldenke, Phytologia 4: 206--207. 1953; Moldenke, Résumé 103 & 490. 1959; Moldenke, Fifth Summ. 1: 168 (1971) and 2: 959. 1971; Moldenke, Phytologia 33: 146. 1976.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 147. 1928.

This species is apparently based on A. Silveira 365 from "In campis arenosis prope Capão Redondo, in Serra do Cipó", Minas Gerais, Brazil, collected in April, 1905, and deposited in the Silveira herbarium. In his 1928 work Silveira also cites a collection made by Brade "in campis montis Itataiai" in June of 1913. The latter collection appears to be Herb. Jard. Bot. Rio Jan. 1965. In the text of his 1928 work plate 147, illustrating P. tuberculatus, is erroneously cited under P. schwackeanus Ruhl.

Paepalanthus tuberculatus is apparently known thus far only from these two collections.

PAEPALANTHUS TUBEROSUS (Bong.) Kunth, Enum. Pl. 3: 508--509. 1841.

Synonymy: Eriocaulon tuberosum Bong., Mém. Acad. Imp. Sci. St. Pétersb., ser. 6, 1: 629. 1831. Paepalanthus tuberosus Kunth apud Körn. in Mart., Fl. Bras. 3 (1): 377. 1863. Dupatya tuberosa (Bong.) Kuntze, Rev. Gen. Pl. 2: 746. 1891. Dupatya tuberosa Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902.

Bibliography: Bong., Ess. Monog. Erioc. 29--30. 1831; Bong., Mém. Acad. Imp. Sci. St. Pétersb., ser. 6, 1: 629 (1831) and ser. 6, 3: 550, pl. 22. 1835; Steud., Nom. Bot., ed. 2, 1: 586. 1840; Kunth, Enum. Pl. 3: 508--509, 575, 576, 614, & 625. 1841; D. Dietr., Syn. Pl. 5: 260. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 278 & 334. 1855; Körn. in Mart., Fl. Bras. 3 (1): 377, 400, & 507. 1863; Kuntze, Rev. Gen. Pl. 2: 746. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 879 (1893) and imp. 1, 2: 402. 1894; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 201, 204, 284, 287, & 292. 1903; Alv. Silv., Fl. Mont. 1: 414. 1928; Stapf, Ind. Lond. 3: 91. 1930; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 2, 145. 1941; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 1: 879 (1946) and imp. 2, 2: 402. 1946; Moldenke, Known Geogr. Distrib. Erioc. 16, 31, 41, & 55. 1946; Moldenke, Known Geogr. Distrib.

Verbenac., [ed. 2], 88 & 212. 1949; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 3, 145. 1959; Moldenke, Résumé 103, 282, 293, & 490. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 1: 879 (1960) and imp. 3, 2: 402. 1960; Moldenke, Phytologia 20: 303. 1970; Moldenke, Fifth Summ. 1: 168 & 486 (1971) and 2: 515 & 959. 1971; Moldenke, Phytologia 30: 40, 78, & 111 (1975) and 33: 48. 1976.

Illustrations: Bong., Mém. Acad. Imp. Sci. St. Pétersb., ser. 6, 3: pl. 22. 1835.

This species is based on an L. Riedel collection from the Serra da Lapa, Minas Gerais, Brazil, collected in anthesis in November, and deposited in the Leningrad herbarium. Kunth (1841) comments that "Flores feminei haud observati. P. corymboso et melaleuco valde affinis. Distinguitur rhizomate crasso, tuberoso; foliis basi glabris (nec lanatis), pubescentibus (nec pilosis, nec ciliatis); pedunculis apice canescentibus et vaginis bifidis." This is almost a verbatim repetition of what Bongard (1831) also says. Ruhland (1903) cites the original collection and another Riedel collection from "auf kiesigen Campos bei Cachoeira", flowering in December, probably deposited in the Berlin herbarium. Silveira (1928) cites A. Silveira 491 from Diamantina, collected in 1908.

The P. Clausen 174, distributed as P. tuberosus, is actually P. aequalis (Vell.) J. F. Macbr., while P. Clausen s.n. [Aug.-April 1840] is P. lanceolatus Körn.

As far as I know, P. tuberosus is known only from the three collections mentioned above.

PAEPALANTHUS ULEANUS Ruhl. in Engl., Pflanzenreich 13 (4-30): 146. 1903.

Bibliography: Ruhl. in Engl., Pflanzenreich 13 (4-30): 127, 146, & 292. 1903; Prain, Ind. Kew. Suppl. 3: 127. 1908; Lützelburg, Estud. Bot. Nordést. 3: 149 & 151. 1923; Herzog in Fedde, Repert. Spec. Nov. 20: 185. 1924; Moldenke, Known Geogr. Distrib. Erioc. 16 & 55. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 88 & 212. 1949; Moldenke, Phytologia 4: 207. 1953; Moldenke, Résumé 103 & 490. 1959; Moldenke, Fifth Summ. 1: 168 (1971) and 2: 959. 1971; Moldenke, Phytologia 29: 501 (1974) and 30: 105. 1975.

This species is based on Ule 4094 from rocky campos in the Serra dos Orgãos, Rio de Janeiro, Brazil, collected in October, 1896, and deposited in the herbarium of the Botanisches Museum in Berlin. Recent collectors have encountered it on moist granite at altitudes of 2000-2400 meters in those mountains, flowering in October and November, and fruiting in January.

Herzog asserts that the species is related to P. hispidissimus Herzog, while Ruhland (1903) claims that its affinity is with P. lundii Körn. It seems to me also to bear striking resemblance to P. elongatulus Ruhl. and P. ovatus Körn. Lützelberg asserts that it grows at altitudes of 2000 to 2300 meters, but is not characteristic of any particular habitat.

The Lützelburg 6584, distributed as P. uleanus in some herbaria, actually is P. ovatus Körn.

Citations: BRAZIL: Rio de Janeiro: Glaziou 17304 [U. S. Nat. Herb. photo 5886] (B, N—photo, P, P, P, P), 17321 (Br, N); Lützelburg 7222 (Mu); Segadas-Vianna 610 (N); Ule 4094 (B—type, Z—isotype).

PAEPALANTHUS UNCINATUS G. Gardn. in Hook., Icon. Pl. 6 [ser. 2, 2]: vi & viii, pl. 523. 1843.

Synonymy: Eriocaulon uncinatum (Gardn.) Steud., Syn. Fl. Glum. 2: [Cyp.] 281—282. 1855. Dupatya uncinata (Gardn.) Kuntze, Rev. Gen. Fl. 2: 746. 1891. Eriocaulon uncinatum Steud. apud Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 874, in syn. 1893. Dupatya uncinata Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902.

Bibliography: G. Gardn. in Hook., Icon. Pl. 6 [ser. 2, 2]: vi & viii, pl. 523. 1843; Walp., Ann. 1: 889. 1849; Steud., Syn. Fl. Glum. 2: [Cyp.] 281—282 & 334. 1855; Körn. in Mart., Fl. Bras. 3 (1): 345 & 507. 1863; Kuntze, Rev. Gen. Fl. 2: 746. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 879 (1893) and imp. 1, 2: 402. 1894; N. E. Br., Trans. Linn. Soc. Lond. Bot., ser. 2, 6: 71. 1901; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 134, 221, 284, 288, & 292. 1903; Stapf, Ind. Lond. 4: 519. 1930; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 2, 145. 1941; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 1: 879 (1946) and imp. 2, 2: 402. 1946; Moldenke, Known Geogr. Distrib. Erioc. 16, 31, 41, & 55. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 88 & 212. 1949; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 3, 145. 1959; Moldenke, Résumé 103, 282, 293, & 490. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 1: 879 (1960) and imp. 3, 2: 402. 1960; Moldenke, Fifth Summ. 1: 168 & 486 (1971) and 2: 515 & 959. 1971; Moldenke, Phytologia 35: 34. 1976.

Illustrations: G. Gardn. in Hook., Icon. Pl. 6 [ser. 2, 2]: pl. 523. 1843.

This species is based on G. Gardner 5266 from sandy campos in the Diamantina district, Serro do Frio, Minas Gerais, Brazil, collected in August, 1840, and deposited in the herbarium of the Royal Botanic Gardens at Kew. Ruhl. (1903) cites only the original collection and comments that the "species a. cl. Koernicke jure subgeneri Xeractidi Mart. adjungitur, in quo floribus ♂ glabris valde insignis". Thus far it is known only from the original collection.

PAEPALANTHUS UNDULATUS Ruhl. in Engl., Pflanzenreich 13 (4-30): 150. 1903.

Synonymy: Paepalanthus damazioi Ruhl. ex Moldenke, Résumé Suppl. 1: 20, in syn. 1959 [not P. damazioi Beauverd, 1908]. Paepalanthus damazii Ruhl. ex Moldenke, Résumé Suppl. 1: 20, in syn. 1959.

Bibliography: Ruhl. in Engl., Pflanzenreich 13 (4-30): 3, 128, 150, 151, & 292. 1903; Beauverd, Bull. Herb. Boiss., ser. 2, 8: 288. 1908; Prain, Ind. Kew. Suppl. 3: 127. 1908; Alv. Silv., Fl. Mont. 1: 414. 1928; Moldenke, Known Geogr. Distrib. Erioc. 16 & 55. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 88 & 212. 1949; Moldenke, Résumé 103 & 490. 1959; Moldenke, Résumé Suppl. 1: 20. 1959; Moldenke, Fifth Summ. 1: 168 (1971) and 2: 580 & 959. 1971; Moldenke, Phytologia 26: 246 (1973), 29: 315 (1974), and 30: 54 & 81. 1975.

This species is based on Glaziou 17844 from Pico d'Itabira do Campo, Minas Gerais, Brazil, collected in anthesis in December and deposited in the Berlin herbarium where it was photographed by Macbride as his type photograph number 10656. Macbride's photograph number 10592 is of Damazio 709, an isotype of P. damazioi Ruhl. and P. damazii Ruhl., also in the Berlin herbarium. The P. damazioi Beauverd is a valid species previously discussed in this series of notes.

Ruhland (1903) cites only the original collection and comments that the "Folia et pedunculi hirsuti insignia. In capitulis examinatis flores ♀ plures". He asserts that the species is closely related to P. vestitus Ruhl. It certainly bears close habitual resemblance to P. barbulator Herzog, P. leucoblepharus Körn., and P. lützelburgii Herzog. Recent collectors describe it as having inflorescences to 40 cm. tall, with grayish flower-heads, and found it to be frequent among rocks on steep rocky slopes at 1500 meters altitude, flowering and fruiting in February. Silveira (1928) cites A. Silveira 535 from the Serra do Curral, Minas Gerais, collected in 1905.

The M. A. Chase 10342, distributed as P. undulatus, actually is P. mexiae Moldenke.

Citations: BRAZIL: Minas Gerais: Damazio 709 [Macbride photos 10592] (B, N—photo, N—photo, W—photo); Glaziou 17844 [Macbride photos 10656] (B—type, N—photo of type, N—photo of type, W—photo of type, Z—isotype); Irwin, Maxwell, & Wasshausen 19524 (Au, N, W—2759043, Z).

PAEPALANTHUS URBANIANUS Ruhl. in Engl., Pflanzenreich 13 (4-30): 188. 1903.

Synonymy: Paepalanthus urbanii Ruhl. in Engl. & Prantl, Nat. Pflanzenfam., ed. 2, 15a: 40. 1930.

Bibliography: Ruhl. in Engl., Pflanzenreich 13 (4-30): 184, 188, & 292. 1903; Prain, Ind. Kew. Suppl. 3: 127. 1908; Ruhl. in Engl. & Prantl, Nat. Pflanzenfam., ed. 2, 15a: 40. 1930; Moldenke, Known Geogr. Distrib. Erioc. 16 & 55. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 77 & 212. 1949; Moldenke, Résumé 103 & 490. 1959; Moldenke, Fifth Summ. 1: 168 (1971) and 2: 592 & 959. 1971; Moldenke, Phytologia 28: 439 (1974), 29: 294 & 296 (1974), and 33: 29, 191, 192, 195, & 196. 1976.

This species is based on Glaziou 22318 from dry campos in the

Serra dos Veadeiros, Goiás, Brazil, collected in flower in January, and deposited in the Berlin herbarium where it was photographed by Macbride as his type photograph number 10657. Ruhland (1903) cites only the original collection and comments that "Species cum P. amoeno Koern. affinis, sed foliis facillime dignoscenda. P. specioso Koern. habitu jam diversa."

Recent collectors describe P. urbanianus as an erect subshrub, 0.8--1.5 m. tall, the stem much branched, and the flower-heads yellow. They have found it growing on campos and rocky campos, in areas of dense cerrado on hillsides and adjacent campo, on wet slopes in campo in areas of campo and cerrado, and in "cascalho úmido", often growing along with Xyris, at altitudes of 950--1500 meters, flowering from March to May and in August, fruiting in August. Héring 10431 has very narrow leaves, while on Hatschbach 29948 and Mello Barreto 2487 they are extraordinarily broad. Mrs. Chase reports the plant as "stiffly erect, on open rocky steep slope characteristic of upper altitudes, 1100--1200 m." and found it in flower and fruit in March and April.

Material of this species has been misidentified, distributed in some herbaria, and even cited by me in previous installments of this series as P. acanthophyllus Ruhl., P. amoenus (Bong.) Körn., and P. speciosus Körn., to which taxa, as well as to P. cordatus Ruhl., it is obviously closely related.

Emended citations: BRAZIL: Distrito Federal: Héring 10431 (N). Goiás: W. R. Anderson 7689 (N, Z); Glaziou 22318 [Macbride photos 10657] (B--type, Br--isotype, N--isotype, N--photo of type, N--photo of type, W--photo of type); Irwin, Harley, & Smith 32034 (N, W--2709596). Minas Gerais: M. A. Chase 9221 (W--1282186); Glaziou 19977 (C); Hatschbach 29948 (Ca--1385179, N); Kubitski 71-22 (Mu); Mello Barreto 2487 (N); L. B. Smith 7075 (N, W--2120225, W--2120226).

PAEPALANTHUS USTERII Beauverd, Bull. Herb. Boiss., ser. 2, 8: 295--297, fig. 12 A 1--13. 1908.

Synonymy: Paepalanthus usteri Beauverd apud Stapf, Ind. Lond. 4: 519. 1930.

Bibliography: Beauverd, Bull. Herb. Boiss., ser. 2, 8: 295--297, fig. 12 A 1--13. 1908; Prain, Ind. Kew. Suppl. 4, imp. 1, 170. 1913; Stapf, Ind. Lond. 4: 519. 1930; Moldenke, Known Geogr. Distrib. Ericoc. 16 & 55. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 88 & 212. 1949; Prain, Ind. Kew. Suppl. 4, imp. 2, 170. 1958; Moldenke, Résumé 103 & 490. 1959; Moldenke, Fifth Summ. 1: 168 (1971) and 2: 592 & 959. 1971; Angely, Fl. Anal. & Fitogeogr. Est. S. Paulo, ed. 1, 6: 1160 & Ind. 21. 1972.

Illustrations: Beauverd, Bull. Herb. Boiss., ser. 2, 8: 296, fig. 12 A 1--13. 1908.

This species is based on "No. 7 (in Herb. polytechn. S. Paulo) 'Charagua, pr. Sao Paulo; leg. A. Usteri, 4 fevrier 1907'" and deposited in the Herbarium Boissier in Geneva. Beauverd (1908)

comments that the species is "Voisine du polymorphe Paepalanthus planifolius (Bong.) Koernicke" but that it "s'en distingué nettement par son port beaucoup plus réduit, ses feuilles plus coriaccés, d'un vert glauque et à bords enroulés, ses pédoncules beaucoup moins nombreux, à gaines proportionnellement plus longues, et ses capitules 3--4 céphales beaucoup plus petits; seule l'analyse des fleurs accuse de grandes analogues avec celles du P. planifolius. -- Il se pourrait d'ailleurs que l'une des différences essentielles que nous avons remarquées chez les fleurs fût imputable à une cause accidentelle; l'extrémité des sépales mâles nous est toujours appa- rue glabre chez la nouvelle espèce tandis qu'elle est ciliée de poils claviformes chez la plante de Koernicke, d'après la planche et cet auteur (tab. 52, fig. 2a), ces poils paraissent être très caducs et auraient du rester inaperçus dans notre spécimen. Néanmoins, les autres caractères notés suffisent à justifier la valeur spécifique de cette plante que nous sommes heureux de dédier à son collecteur M. prof. Dr. A. Usteri, du Polytechnicum de São Paulo."

The Angely (1972) work referred to in the bibliography of this species is sometimes cited as "1970", the title-page date, which is incorrect.

The species is thus far known only from the original specimen.

PAEPALANTHUS VAGINANS Alv. Silv., Fl. Mont. 1: 166--167, pl. 106. 1928.

Bibliography: Alv. Silv., Fl. Mont. 1: 166--167 & 414, pl. 106. 1928; Wangerin in Just, Bot. Jahresber. 57 (1): 477. 1937; A. W. Hill, Ind. Kew. Suppl. 9: 200. 1938; Worsdell, Ind. Lond. Suppl. 2: 184. 1941; Moldenke, Known Geogr. Distrib. Erioc. 16 & 55. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 88 & 212. 1949; Moldenke, Résumé 103 & 490. 1959; Moldenke, Fifth Summ. 1: 168 & 486 (1971) and 2: 959. 1971.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 106. 1928.

The type of this species was collected "Secus margines capoeiras inter Itacambira et Juramento", Minas Gerais, Brazil, by Álvaro Adolpho da Silveira (no. 817) in July, 1926, and is deposited in the Silveira herbarium; on p. 414 of his work (1928) Silveira gives the type locality as "Itacambira". He comments that the "Species ob folia vaginantia ab omnibus speciebus Paepalanthi P. ocreato excepto valde distincta".

Thus far P. vaginans is known only from the original collection.

PAEPALANTHUS VAGINATUS Körn. in Mart., Fl. Bras. 3 (1): 313--314. 1863 [not P. vaginatus Mart., 1959].

Synonymy: Dupatya vaginata (Körn.) Kuntze, Rev. Gen. Pl. 2: 746. 1891. Dupatya vaginata Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902.

Bibliography: Körn. in Mart., Fl. Bras. 3 (1): 313--314 & 506. 1863; Kuntze, Rev. Gen. Pl. 2: 746. 1891; Jacks. in Hook. f. &

Jacks., Ind. Kew., imp. 1, 2: 402. 1894; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 26, 166, 284, & 292. 1903; Alv. Silv., Fl. Mont. 1: 141. 1928; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 2, 145. 1941; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 2: 402. 1946; Moldenke, Known Geogr. Distrib. Erico. 16, 31, & 55. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 88 & 212. 1949; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 3, 145. 1959; Moldenke, Résumé 103, 282, & 490. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 2: 402. 1960; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 186, 187, & 191. 1969; Moldenke, Fifth Summ. 1: 168 (1971) and 2: 959. 1971.

This species is based on a Riedel collection (probably no. 1462) from "auf grasigem Boden der Serra do Caraça", Minas Gerais, Brazil, flowering in January, deposited in the Berlin herbarium where it was photographed by Macbride as his type photograph number 10661. I have personally seen and examined this specimen and have compared it with the photograph to be certain of their identity since the label accompanying Macbride's photograph is erroneously inscribed "Martius 874" and "Paepalanthus vellozioides Koern." On the other hand, Macbride's photograph number 10660, labeled as "Paepalanthus vaginatus", is actually a picture of P. vellozioides Körn. Silveira (1928) cites A. Silveira 334, collected in the Serra do Cipó, Minas Gerais, in 1905.

Irwin and his associates encountered P. vaginatus in wet ground at gallery margin in an area of gallery forest and adjacent cerrado, at 1300 meters altitude, and describe the plant as a "rosette herb, inflorescence to 30 cm. tall in bud".

The Glaziou collection cited below bears a printed label inscribed "Rio de Janeiro", but the collection was actually made on campos at São Vicente in Minas Gerais. Ruhland (1903) says of it "Secundum specimina Glazioviana, certissime ad hanc speciem pertinentia, diagnosis a cl. Koernicke data ita est supplenda: Folia juniora apice, praesertim supra, sparse et breviter puberula, mox calva; antherae demum rotundo-ovatae, hyalinae; flos ♀: breviter pedicellatus; sepala 2, basi connata, obovata, obtusiuscula, concava, rigidula, ciliata, fusca; petala 2, libera, oblongo-spathulata, rotundato-obtusa, flavidula, apice hyalina et tenuimembranacea, ciliata; germen bicoccum; stylus brevis, stigmatibus 2, profunde bifida; appendices quam illa paullo breviores filiformes, apice papillosae. Receptaculum pilosum."

The P. vaginatus Mart., referred to in the synonymy above, is a synonym of Syngonanthus fischerianus (Bong.) Ruhl.

Citations: BRAZIL: Minas Gerais: Glaziou 15531 (B, Z); Irwin, Reis dos Santos, Souza, & Fonsêca 22825 (N, Z); L. Riedel 1462 [Macbride photos 10661] (B--type, N--photo of type, N--photo of type, Ut--382--isotype, W--photo of type). State undetermined: Weddell s.n. (P).

PAEPALANTHUS VARIABILIS Alv. Silv., Fl. Serr. Min. 49, pl. 17. 1908.

Bibliography: Alv. Silv., Fl. Serr. Min. 49, pl. 17. 1908; Fedde & Schust. in Just, Bot. Jahresber. 46 (2): 4. 1924; Alv. Silv., Fl. Mont. 1: 142, 154—156, & 414, pl. 97 & 98. 1928; Stapf, Ind. Lond. 4: 519. 1930; A. W. Hill, Ind. Kew. Suppl. 8: 169. 1933; Wangerin in Just, Bot. Jahresber. 57 (1): 477. 1937; Worsdell, Ind. Lond. Suppl. 2: 184. 1941; Moldenke, Known Geogr. Distrib. Erioc. 16 & 55. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 88 & 212. 1949; Moldenke, Résumé 103 & 490. 1959; Moldenke, Phytologia 20: 352. 1970; Moldenke, Fifth Summ. 1: 168 (1971) and 2: 959. 1971; Moldenke, Phytologia 30: 271. 1975.

Illustrations: Alv. Silv., Fl. Serr. Min. pl. 17. 1908; Alv. Silv., Fl. Mont. 1: pl. 97 & 98. 1928.

This species is based on A. Silveira 313 from "In campis locis siccis arenosisque in Serra do Cipó", Minas Gerais, Brazil, collected in April, 1905, and deposited in the Silveira herbarium. In a later publication, Silveira (1928) cites A. Silveira 366, also from the Serra do Cipó and also collected in 1905.

Recent collectors describe the plant as having inflorescences to 10 cm. tall and have found it growing on wet sandy campos and shady hillside campos, at 1300 meters altitude, flowering in February and April.

Silveira (1928) says that the "Species cum P. applanato Ruhl. valde affinis; sed pedunculis teretibus atque numerosis (usque 80) petalis in 8 speciminibus suppentibus florum femineorum intus pilosis et pilis supremis bracteorum perigoniorumque non tuberculatis distincta est."

The Mello Barreto 2522, distributed as P. variabilis, is actually P. amoemus (Eong.) Körn.

Citations: BRAZIL: Minas Gerais: Irwin, Maxwell, & Wasshausen 20230 (N); Pereira 2900 [Pabst 3726; Herb. Brad. 3836] (Bd); A. Silveira 313 (B—isotype, Z—isotype).

PAEPALANTHUS VARIABILIS var. GLABRESCENS Alv. Silv., Fl. Mont. 1: 156. 1928.

Bibliography: Alv. Silv., Fl. Mont. 1: 156 & 415. 1928; Moldenke, Known Geogr. Distrib. Erioc. 16 & 55. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 88 & 212. 1949; Moldenke, Résumé 103 & 490. 1959; Moldenke, Fifth Summ. 1: 168 (1971) and 2: 959. 1971.

This variety is based on A. Silveira 645 from "In campis arenosis in Serra do Cabral", Minas Gerais, Brazil, collected in 1917, and deposited in the Silveira herbarium. Silveira (1928) describes it as "A forma typica foliis longe ciliatis ceterum glabris et bracteis involucrantibus dorso solo pilis brevibus paucisque differt". It is known thus far only from the original collection.

PAEPALANTHUS VELLOZIOIDES Körn. in Mart., Fl. Bras. 3 (1): 401—402, pl. 51, fig. 2. 1863.

Synonymy: *Dupatya vellozioides* (Körn.) Kuntze, Rev. Gen. Fl. 2: 746. 1891. *Dupatya vellozioides* Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902. *Paepalanthus vellozioides* Körn. ex Moldenke, Résumé 329, in syn. 1959; Rennó, Levant. Herb. Inst. Agron. Minas 71. 1960.

Bibliography: Körn. in Mart., Fl. Bras. 3 (1): 401—402, 499, & 507, pl. 51, fig. 2. 1863; Hieron. in Engl. & Prantl, Nat. Pflanzenfam., ed. 1, 2 (4): 23, fig. 12 A—D. 1888; Kuntze, Rev. Gen. Fl. 2: 746. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 402. 1894; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 201—204, 284, & 292, fig. 29 B—L. 1903; Saunders, Ann. Bot. 39: 157. 1925; Alv. Silv., Fl. Mont. 1: 415. 1928; Stapf, Ind. Lond. 4: 519. 1930; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 2, 145. 1941; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 2: 402. 1946; Moldenke, Known Geogr. Distrib. Ericoc. 16, 31, & 55. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 88 & 212. 1949; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 3, 145. 1959; Moldenke, Résumé 103, 282, 329, & 490. 1959; Moldenke, Résumé Suppl. 1: 22. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 2: 402. 1960; Rennó, Levant. Herb. Inst. Agron. Minas 71. 1960; Moldenke, Résumé Suppl. 18: 10. 1969; Moldenke, Fifth Summ. 1: 168 & 486 (1971) and 2: 591, 592, & 959. 1971; Moldenke, Phytologia 26: 138 & 240 (1973), 29: 301 (1974), 30: 40, 78, & 111 (1975), and 33: 48, 130, & 201. 1976.

Illustrations: Körn. in Mart., Fl. Bras. 3 (1): pl. 51, fig. 2. 1863; Hieron. in Engl. & Prantl, Nat. Pflanzenfam., ed. 1, 2 (4): 23, fig. 12 A—D. 1888; Ruhl. in Engl., Pflanzenreich 13 (4-30): 204, fig. 29 B—L. 1903.

This species is based on three cotype collections: Martius 874 from Minas Gerais, Sellow 1368 from "Serra do Caraça, von Capanema bis Campo", and P. Clausen 96 from "ebendasselbst und auf den Gipfel des Berges Jaragua", both also in Minas Gerais, Brazil, and all deposited in the Berlin herbarium, where the Martius collection was photographed by Macbride as his type photograph number 10660, whose accompanying label unfortunately is inscribed "Riedel 1462" and "Paepalanthus vaginatus" in error. On the other hand, Macbride's photograph of the type of P. vaginatus (his photograph number 10661) is erroneously labeled "Martius 874" and "Paepalanthus vellozioides". A sheet of Martius s.n. in the Meisner Herbarium at the New York Botanical Garden also bears a label numbered "874" but is P. melaleucus (Bong.) Kunth. Martius 874 apparently was originally identified by Martius as P. spixianus Mart. and this binomial is included in the synonymy of P. vellozioides by Ruhland (1903), but in error. Paepalanthus melaleucus and P. spixianus appear to be valid species, not identical with, but certainly very similar to closely related to P. vellozioides.

Recent collectors have found P. vellozioides growing on campos and wet campos, at altitudes of 1200—1500 meters, flowering from November to February, as well as in May and August, and fruiting in November, January, and February. Irwin and his associates report the plant as having light-gray flowering heads and "forming large tufts on campo in areas of cerrado, sedge meadow (brejo), sandstone outcrops, and gallery forest", growing in dry sandy soil. The Eitens describe the heads as "light-gray around the edge, white in the center" and the plant as growing in clumps, "common on rocky knolls with very fine sand [which is] light-gray because of a small humus content". Anderson and his associates encountered it in sandy soil with sandstone in an area of forest along streams, adjacent rocky and grassy hillsides, and grassy campos on the tops of the hills.

Silveira (1928) cites A. Silveira 428 from the Serra do Caraça, collected in 1906. The labels for Anderson, Stieber, & Kirkbride 36092, distributed by the New York Botanical Garden, are inscribed "Paepalanthus bryoides (Riedel) Kunth. Det. H. N. Moldenke", but I never made any such determination! A clerical error in transcription must be involved here somewhere.

Paepalanthus vellozioides is closely related to and very similar to P. bromelioides Alv. Silv., P. corymbosus (Bong.) Kunth, P. lanceolatus Körn., P. melaleucus (Bong.) Kunth, and P. rigidulus Mart., with points of resemblance also to P. cacuminis Ruhl., P. hydra Ruhl., P. laxifolius Körn., P. sicaefolius Alf. Silv., etc., although Ruhland (1903) maintains that the "Species forma bractearum involucrentium insignis".

Material of P. vellozioides has been misidentified and distributed in some herbaria as P. bromelioides Alv. Silv., P. bryoides (Riedel) Kunth, P. lanceolatus Körn., P. spixianus Mart., and P. vaginatus Körn. On the other hand, the Macbride photograph number 10661, distributed as P. vellozioides, actually represents P. vaginatus Körn., while Eiten & Eiten 10922 is P. bromelioides Alv. Silv.

Citations: BRAZIL: Minas Gerais: Anderson, Stieber, & Kirkbride 36092 (N, W--2709801); P. Clausen 96 (B--cotype); Costa 138 (Ja, N); Eiten & Eiten 6784 (W--2688355); Glaziou 15523 (Br); Irwin, Harley, & Onishi 29030 (N, W--2709818); Macedo 2995 (N, S, S); Magalhães Gomes & Schwacke 757 [Herb. Magalhães Gomes 757; Herb. Jard. Bot. Belo Horiz. 26678] (N); Maguire, Maguire, & Murça Pires 44680 (N, N); Martius 874 ["213"; Macbride photos 10660] (B--cotype, Br--cotype, Mu--cotype, N--cotype, N--photo of cotype, N--photo of cotype, W--photo of cotype); Mello Barreto 2478 (N); Occhioni & Occhioni s.n. [Herb. Fac. Nac. Farmac. 11421] (Z); L. Riedel s.n. [Serra do Caraça] (Br); Sellow 1368 (B--cotype).
MOUNTED ILLUSTRATIONS: drawings & notes by Körnicke (B, B).

PAEPALANTHUS VELUTINUS Alv. Silv., Fl. Mont. 1: 145—147, pl. 91. 1928.

Synonymy: Paepalanthus vehetimus Alv. Silv., Fl. Mont. 1: pl. 91, sphalm. 1928.

Bibliography: Alv. Silv., Fl. Mont. 1: 145—147 & 415, pl. 91. 1928; Wangerin in Just, Bot. Jahresber. 57 (1): 477. 1937; A. W. Hill, Ind. Kew. Suppl. 9: 200. 1938; Worsdell, Ind. Lond. Suppl. 2: 184. 1941; Moldenke, Known Geogr. Distrib. Erioc. 16 & 55. 1946; Moldenke, Phytologia 2: 381. 1947; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 88 & 212. 1949; Moldenke, Résumé 103, 329, & 490. 1959; Moldenke, Fifth Summ. 1: 168 (1971) and 2: 592 & 959. 1971.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 91. 1928.

This species is based on A. Silveira 577 from "In pratis arenosis in Serra do Cabral", Minas Gerais, Brazil, collected in May, 1910, and deposited in the Silveira herbarium. Silveira (1928) comments that the "Species ob colorem formam bractearum involu- crantium indumentum foliorum caulinarum etc. perbene distincta".

This species is known thus far only from the original collec- tion.

PAEPALANTHUS VENETIFOLIUS Moldenke & Steyerl. ex Moldenke, Phyto- logia 31: 383, nom. nud. 1975; in press.

Bibliography: Moldenke, Phytologia 31: 383. 1975.

Citations: VENEZUELA: Bolívar: Steyerl, Espinoza, & Brewer- Carias 109405 (Z--type).

PAEPALANTHUS VENUSTOIDES Moldenke, Act. Biol. Venez. 2: 48—50. 1957.

Synonymy: Paepalanthus sp. Soukup, Biota 2: 302. 1959.

Bibliography: Moldenke, Act. Biol. Venez. 2: 48—50. 1957; A- non., Biol. Abstr. 32: 2917. 1958; Soukup, Biota 2: 302. 1959; G. Taylor, Ind. Kew. Suppl. 13: 98. 1966; Moldenke, Résumé 72 & 490. 1959; Moldenke, Fifth Summ. 1: 126 (1971) and 2: 959. 1971; Mol- denke, Phytologia 31: 405. 1975.

Illustrations: Moldenke, Act. Biol. Venez. 2: 49. 1957; Soukup, Biota 5: 302. 1959.

Citations: VENEZUELA: Bolívar: Pannier & Schwabe s.n. [Auyan- tepui] (Ve); Vareschi & Foldats 4854 (N--type, Z--isotype).

PAEPALANTHUS VENUSTUS Moldenke, Mem. N. Y. Bot. Gard. 9: 281—282. 1957 [not P. venustus Alv. Silv., 1928 hyponym].

Bibliography: Alv. Silv., Fl. Mont. 1: pl. 232. 1928; Moldenke, Mem. N. Y. Bot. Gard. 9: 281—282. 1957; Moldenke, Résumé 72 & 490. 1959; G. Taylor, Ind. Kew. Suppl. 13: 98. 1966; Moldenke, Fifth Summ. 1: 126 (1971) and 2: 959. 1971.

The P. venustus of Silveira, referred to above, is a typograph- ic error for Syngonanthus venustus Alv. Silv.

Citations: VENEZUELA: Bolívar: B. Maguire 32800 (Mu, N), 32840 (Mu—isotype, N—type), 32884 (N); J. A. Steyerl 74902 (Z).

[to be continued]